

Computation of limits worksheet

1. $\lim_{x \rightarrow -5} \frac{x^2 - 25}{x^2 + 2x - 15}$

$$\lim_{x \rightarrow -5} \frac{(x + \quad)(x - \quad)}{(x + \quad)(x - \quad)}$$

$$\lim_{x \rightarrow -5} \frac{(x - \quad)}{(x - \quad)}$$

$$\frac{(-5 - \quad)}{(-5 - \quad)}$$

$$\frac{(\quad)}{(\quad)}$$

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2. $\lim_{x \rightarrow 4} \frac{\sqrt{x} - 2}{x - 4}$

$$\lim_{x \rightarrow 4} \frac{\sqrt{x} - 2}{x - 4} \cdot \frac{\sqrt{x} + 2}{\sqrt{x} + 2}$$

$$\lim_{x \rightarrow 4} \frac{(\quad - \quad)}{(x - 4)(\sqrt{x} + 2)}$$

$$\lim_{x \rightarrow 4} \frac{1}{(\sqrt{x} + \quad)}$$

$$\frac{1}{(\sqrt{4} + \quad)}$$

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$$3. \lim_{x \rightarrow -3} \frac{6+4x}{x^2+1}$$

$$\lim_{x \rightarrow -3} \frac{6 + 4(\quad)}{(\quad)^2 + 1}$$

$$\frac{6 + \quad}{+ 1}$$

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$$4. \lim_{x \rightarrow 0} \frac{(6+x)^2 - 36}{x}$$

$$\lim_{x \rightarrow 0} \frac{(36 + \quad + x^2) - 36}{x}$$

$$\lim_{x \rightarrow 0} \frac{x^2 + \quad x}{x}$$

$$\lim_{x \rightarrow 0} \frac{x(\quad + \quad)}{x}$$

$$\lim_{x \rightarrow 0} (\quad + \quad)$$

$$\lim_{x \rightarrow 0} (0 + \quad)$$

$$5. \lim_{x \rightarrow 4} \frac{x^2 - 16}{x - 4}$$

$$\lim_{x \rightarrow 4} \frac{(x - \quad)(x + \quad)}{(x - 4)}$$

$$\lim_{x \rightarrow 4} (x + \quad)$$

$$\lim_{x \rightarrow 4} (4 + \quad)$$

6. Bonus Question:

$$\lim_{x \rightarrow 0} \frac{1}{x\sqrt{x+1}} - \frac{1}{x} = \underline{\hspace{2cm}}$$